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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,087

10/04/2005

Dongping Tao

434B-291

4135

1009 7590 11/19/2009
KING & SCHICKLI, PLLC
247 NORTH BROADWAY
LEXINGTON, KY 40507

EXAMINER

TAI, XIUYU

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/19/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,087	Applicant(s) TAO ET AL.	
	Examiner Xiuyu Tai	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-11 and 22-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-11 and 22-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-11, and 22-33 have been considered but are moot in view of the new ground(s) of rejection necessitated by applicant's amendment.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 8, 22, 23, 26, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Bright et al (U.S. 4, 072, 129).

4. Regarding claim 1, Bright et al disclose an electrostatic powder deposition having a tribo electrification device for charging particles (col. 1, line 5-7). The device includes a charging fan rotor 34 (i.e. a tribocharging rotor, Figure 1, col. 1, line 40-45 & col. 2, line 309-40) within a housing 40 (i.e. a chamber, Figure 1, col. 1, line 40-45 & col. 3, line 21-22) having an hopper 10 for feeding powder (i.e. an inlet) at one end of the housing 40 (Figure 1, col. 2, line 39-40) and an outlet 14 for discharging the powder at the other end of the housing 40 (Figure 1, col. 2, line 18-20), wherein the powder acquires a charge by a tribo electric mechanism via the blades of the fan rotor 34 (col. 2, line 43-49) and rotor 34 may be coated with material such as nylon (i.e. a non permeable outer surface, col. 3, line 1-3).

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Although Bright does not expressly teach the device for a particle mixture, the reference is intended for using in charging powder (col. 2, line 17-19), which may inherently contain a particle mixture. Moreover, Bright teaches every structural limitation as cited in the instant claim; therefore, the charging section of Bright is fully capable of using in charging particles in a particle mixture.

5. Regarding claim 2, the fan rotor 34 has a member of blades (Figure 1, col. 1, line 41 & col. 2, line 47), resulting in a non-circular cross section.

6. Regarding claim 3, the rotor fan 34 is positioned within the housing 40 and the fluidized powder falls on to the fan rotor 34 (Figure 1, col. 2, line 39-40).

7. Regarding claim 4, depending upon the orientation, the inlet of the housing is on one end of the housing while the outlet is on the other side of the housing (Figure 1).

8. Regarding claim 8, Bright teaches a typical speed for epoxy resin is about 3000 to 4000 rpm (col. 3, line 15-16), which is within the claimed range of rotating speed.

Moreover, the rotating speed is considered as an operating parameter of the device and manner operating the device does not differentiate apparatus claim (MPEP 2114).

9. Regarding claim 31, the outer surface of the fan rotor 34 conforms to the inner surface of the housing 40 (Figure 1).

10. Regarding claim 22, Bright et al disclose an electrostatic powder deposition having a tribo electrification device for charging particles (col. 1, line 5-7). The device includes a charging fan rotor 34 (i.e. a tribocharging rotor, Figure 1, col. 1, line 40-45 & col. 2, line 309-40) within a housing 40 (i.e. a chamber having a wall, Figure 1, col. 1, line 40-45 & col. 3, line 21-22) having an hopper 10 for feeding powder (i.e. an inlet) at

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one end of the housing 40 (Figure 1, col. 2, line 39-40) and an outlet 14 for discharging the powder at the other end of the housing 40 (Figure 1, col. 2, line 18-20), wherein the powder acquires a charge by a tribo electric mechanism via the blades of the fan rotor 34 (col. 2, line 43-49).

The claim contains means (rotatable means) plus function (for frictional charging the particles) language. The instant specification discloses this limitation as a rotor. The charging fan rotor 34 is an equivalent structure. Therefore, the charging fan rotor 34 of Bright reads on the cited means plus function limitation.

Although Bright does not expressly teach the device for a particle mixture, the reference is intended for using in charging powder(col. 2, line 17-19), which may inherently contain a particle mixture. Moreover, Bright teaches every structural limitation as cited in the instant claim; therefore, the charging section of Bright is fully capable of using in charging particles in a particle mixture.

11. Regarding claim 23, the charging fan rotor 34 is positioned within the housing 40 (Figure 1, col. 1, line 40-45 & col. 3, line 21-22) and rotor 34 may be coated with material such as nylon (col. 3, line 1-3).

12. Regarding claim 26, an electric motor 36 powers the fan rotor 34 (Figure 1, col. 2, line 39-40).

Claim Rejections - 35 USC § 103

13. Claims 5, 6, 24, and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Bright et al (U.S. 4, 072, 129) as applied to claims 1 and 22 above, and further in view of Stencel et al (U.S. 6,498,313).

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14. Regarding claims 5 and 24, Bright fails to teach a partition projecting into the chamber. However, Stencel et al disclose an electrostatic separation apparatus. The apparatus comprises a chamber 38 including an electric field zone (Figure 3; col. 8, line 33-34) and a partition 50 telescoping into the chamber 38 (Figure 3; col. 11, line 15-18). Stencel further indicates that the partition 50 can adjustably vary the length of electric field zone in the chamber 38 for improving efficiency (col. 22-35). Therefore, it would be obvious for one having ordinary skill in the art to include a partition as suggested by Stencel in the chamber of Bright in order to enhance charging/separation efficiency. The partition of Bright/Stencel is fully capable of performing the claimed functions.

15. Regarding claims 6 and 25, Stencel also teaches that the partition 50 can move to adjust the length of electric field zone in the chamber 38 (Figure 3; col. 11, line 15-20 & col. 3, line 65-67), reads on the instant claim.

16. Claims 9, 10, 27, and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Bright et al (U.S. 4, 072, 129) as applied to claims 1 and 22 above, and further in view of Yoon et al (U.S. 6,320,148).

17. Regarding claims 9 and 27, Bright fails to an electric field in the housing. However, Yoon disclose an apparatus for charging and separating particles. The device utilizes an electric field from a power source 4 to charge conducting particles in the powder while non-conducting particles are charged via tribo electrification (Figure 2, col. 4, line 39-45), hence efficiently charging more particles. Therefore, it would be obvious for one having ordinary skill in the art to include an electric field as suggested by Yoon

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in the device of Bright in order to charge more particle, hence improving charging efficiency.

18. Regarding claims 10 and 28, Yoon teaches to connect the power source 4 to the electrodes 2 and 3 for generating an electric field to charge particles (Figure 2, col. 4, line 55-57). Although Yoon does not explicitly teach to connect the power source between the rotor and the housing, one having ordinary skill in the art would immediately envision from the teaching of Yoon that an electric field generated between the rotor and the housing of Bright would accomplish charging particles within the space via conduction. Therefore, the combined teaching of Bright/Yoon fairly suggests an electric field between the rotor and the housing.

19. Claims 11, and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Bright et al (U.S. 4, 072, 129) as applied to claims 1 and 22 above, and further in view of Stencel et al (U.S. 5,755,333, cited in IDS).

20. Regarding claims 11 and 29, Bright teaches a powder hopper 10 for feeding uncharged powder to the fan 12 (i.e. a feedstream to the inlet, Figure 1, col. 2, line 17-19), but does not teach an electrostatic separator downstream of the charger for separating charged particles. However, Stencel et al disclose an apparatus for triboelectric-centrifugal separation (ABSTRACT). The apparatus includes a triboelectric charging section 12 having a an inlet 28 and an outlet 30 (Figure 1, col. 4, line 1, line 39 & line 54) and a separation section 14 that receives charged feedstock from the outlet 30 (Figure 1, col. 4, line 55-56) for electrostatically separating particles (col. 5, line 12-17). Therefore, it would be obvious for one having ordinary skill in the art to include a

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separation section as suggested by Stencel in order to separate charged particles with the device of Bright if separation is desired.

21. Claims 1-4, 8, 11, 22, 23, 26, and 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stencel et al (U.S. 5,755,333, cited in IDS) in view of Bright et al (U.S. 4, 072, 129).

22. Regarding claim 1, Stencel et al disclose an apparatus for triboelectric-centrifugal separation (ABSTRACT). The apparatus is used for separating charged particles from a raw feedstock including two species of particle (Figure 1; col. 4, line 35-37). The apparatus includes: a triboelectric charging section 12 having an annular path 18 (i.e. a chamber, Figure 1, col. 4, line 1-3) with an inlet 28 (Figure 1, col. 4, line 35-38) and an outlet 30 (Figure 1, col. 4, line 54-55), wherein the trioelectric element 20 is lined with ceramic (i.e. a non permeable outer surface, Figure 1, col. 6, line 57-58).

Stencel does not teach the triboelectric element 20 of the charging section 12 being rotatable in the annular path 18. However, Bright et al disclose an electrostatic powder deposition having a tribo electrification device for charging particles (col. 1, line 5-7). The device includes a charging fan rotor 34 (i.e. a tribocharging rotor, Figure 1, col. 1, line 40-45 & col. 2, line 309-40) within a housing 40 (i.e. a chamber, Figure 1, col. 1, line 40-45 & col. 3, line 21-22), wherein rotor 34 may be coated with material such as nylon (i.e. a non permeable outer surface, col. 3, line 1-3). Bright indicates that the rotor fan 34 improves charging efficiency by providing a large surface area for acquiring tribocharging during rotation (col. 2, line 43-49). Therefore, it would be

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obvious for one having ordinary skill in the art to utilize the rotor fan of Bright in the device of Stencel in order to improve charging efficiency for better separation.

23. Regarding claim 2, the fan rotor 34 of Bright has a member of blades (Figure 1, col. 1, line 41 & col. 2, line 47), resulting in a non-circular cross section.

24. Regarding claim 3, Stencel teaches an annular path 18 defined by a core member 22 and a cylindrical outer wall member 24 (Figure 1, col. 4, line 5-6).

25. Regarding claim 4, the inlet 28 and the outlet 30 of Stencel are positioned opposite each other (Figure 1).

26. Regarding claim 8, Bright teaches a typical speed for epoxy resin is about 3000 to 4000 rpm (col. 3, line 15-16), which is within the claimed range of rotating speed. Moreover, the rotating speed is considered as an operating parameter of the device and manner operating the device does not differentiate apparatus claim (MPEP 2114).

27. Regarding claim 11, Stencel teaches a separating section 14 downstream of the outlet 30 for separating charged particles (Figure 1, col. 4, line 55-56 & col. 5, line 12-17).

28. Regarding claim 31, the outer surface of the fan rotor 34 of Bright conforms to the inner surface of the housing 40 (Figure 1).

29. Regarding claim 22, Stencel et al disclose an apparatus for triboelectric-centrifugal separation (ABSTRACT). The apparatus is used for separating charged particles from a raw feedstock including two species of particle (Figure 1; col. 4, line 35-37). The apparatus includes: a triboelectric charging section 12 having an annular path

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18 (i.e. a chamber with walls, Figure 1, col. 4, line 1-3) with an inlet 28 (Figure 1, col. 4, line 35-38) and an outlet 30 (Figure 1, col. 4, line 54-55).

Stencel does not teach the triboelectric element 20 of the charging section 12 being rotatable in the annular path 18. However, Bright et al disclose an electrostatic powder deposition having a tribo electrification device for charging particles (col. 1, line 5-7). The device includes a charging fan rotor 34 (i.e. a tribocharging rotor, Figure 1, col. 1, line 40-45 & col. 2, line 309-40) within a housing 40 (i.e. a chamber, Figure 1, col. 1, line 40-45 & col. 3, line 21-22), wherein rotor 34 may be coated with material such as nylon (i.e. a non permeable outer surface, col. 3, line 1-3). Bright indicates that the rotor fan 34 improves charging efficiency by providing a large surface area for acquiring tribocharging during rotation (col. 2, line 43-49). Therefore, it would be obvious for one having ordinary skill in the art to utilize the rotor fan of Bright in the device of Stencel in order to improve charging efficiency for better separation.

The claim contains means (rotatable means) plus function (for frictional charging the particles) language. The instant specification discloses this limitation as a rotor. The charging fan rotor 34 of Bright is an equivalent structure. Therefore, the charging fan rotor 34 of Bright reads on the cited means plus function limitation.

30. Regarding claim 23, the charging fan rotor 34 of Bright is positioned within the housing 40 (Figure 1, col. 1, line 40-45 & col. 3, line 21-22) and rotor 34 may be coated with material such as nylon (col. 3, line 1-3).

31. Regarding claim 26, an electric motor 36 powers the fan rotor 34 (Figure 1, col. 2, line 39-40).

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32. Regarding claim 29, Stencil teaches a separating section 14 downstream of the outlet 30 for separating charged particles (Figure 1, col. 4, line 55-56 & col. 5, line 12-17).

33. Regarding claim 30, Stencil et al disclose an apparatus for triboelectric-centrifugal separation (ABSTRACT). The apparatus includes: (1) a raw feedstock including two species of particle (Figure 1; col. 4, line 35-37); (2) a triboelectric charging section 12 having an annular path 18 (i.e. a chamber with walls, Figure 1, col. 4, line 1-3) with an inlet 28 (Figure 1, col. 4, line 35-38) and an outlet 30 (Figure 1, col. 4, line 54-55); and (3) a separating section 14 downstream of the outlet 30 for separating charged particles (Figure 1, col. 4, line 55-56 & col. 5, line 12-17).

Stencil does not teach the triboelectric element 20 of the charging section 12 being rotatable in the annular path 18. However, Bright et al disclose an electrostatic powder deposition having a tribo electrification device for charging particles (col. 1, line 5-7). The device includes a charging fan rotor 34 (i.e. a tribocharging rotor, Figure 1, col. 1, line 40-45 & col. 2, line 309-40) within a housing 40 (i.e. a chamber, Figure 1, col. 1, line 40-45 & col. 3, line 21-22), wherein rotor 34 may be coated with material such as nylon (i.e. a non permeable outer surface, col. 3, line 1-3). Bright indicates that the rotor fan 34 improves charging efficiency by providing a large surface area for acquiring tribocharging during rotation (col. 2, line 43-49). Therefore, it would be obvious for one having ordinary skill in the art to utilize the rotor fan of Bright in the device of Stencil in order to improve charging efficiency for better separation.

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34. Regarding claim 32, the outer surface of the fan rotor 34 of Bright conforms to the inner surface of the housing 40 (Figure 1).

35. Regarding claim 33, Stencil et al disclose an apparatus for triboelectric-centrifugal separation (ABSTRACT). The apparatus is used for separating charged particles from a raw feedstock including two species of particle (Figure 1; col. 4, line 35-37). The apparatus includes: (1) a separating section 14 downstream of the outlet 30 for separating charged particles (Figure 1, col. 4, line 55-56 & col. 5, line 12-17); and (2) a triboelectric charging section 12 having an annular path 18 (i.e. a chamber with walls, Figure 1, col. 4, line 1-3) with an inlet 28 (Figure 1, col. 4, line 35-38) and an outlet 30 (Figure 1, col. 4, line 54-55).

Stencil does not teach the triboelectric element 20 of the charging section 12 being rotatable in the annular path 18. However, Bright et al disclose an electrostatic powder deposition having a tribo electrification device for charging particles (col. 1, line 5-7). The device includes a charging fan rotor 34 (i.e. a tribocharging rotor, Figure 1, col. 1, line 40-45 & col. 2, line 309-40) within a housing 40 (i.e. a chamber, Figure 1, col. 1, line 40-45 & col. 3, line 21-22), wherein rotor 34 may be coated with material such as nylon (i.e. a non permeable outer surface, col. 3, line 1-3). Bright indicates that the rotor fan 34 improves charging efficiency by providing a large surface area for acquiring tribocharging during rotation (col. 2, line 43-49). Therefore, it would be obvious for one having ordinary skill in the art to utilize the rotor fan of Bright in the device of Stencil in order to improve charging efficiency for better separation.

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36. Claims 5, 6, 24, and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Stencel et al (U.S. 5,755,333, cited in IDS) and Bright et al (U.S. 4, 072, 129) as applied to claims 1 and 22 above, and further in view of Stencel et al (U.S. 6,498,313).

37. Regarding claims 5 and 24, Stencel ('333)/Bright fail to teach a partition projecting into the chamber. However, Stencel ('313) et al discloses an electrostatic separation apparatus. The apparatus comprises a chamber 38 including an electric field zone (Figure 3; col. 8, line 33-34) and a partition 50 telescoping into the chamber 38 (Figure 3; col. 11, line 15-18). Stencel further indicates that the partition 50 can adjustably vary the length of electric field zone in the chamber 38 for improving efficiency (col. 22-35). Therefore, it would be obvious for one having ordinary skill in the art to include a partition as suggested by Stencel ('313) in the device of Stencel ('333)/Bright in order to enhance charging/separation efficiency. The partition of Stencel ('333)/Bright is fully capable of performing the claimed functions.

38. Regarding claims 6 and 25, Stencel ('313) also teaches that the partition 50 can move to adjust the length of electric field zone in the chamber 38 (Figure 3; col. 11, line 15-20 & col. 3, line 65-67), reads on the instant claim.

39. Claims 9, 10, 27, and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Stencel et al (U.S. 5,755,333, cited in IDS) and Bright et al (U.S. 4, 072, 129) as applied to claims 1 and 22 above, and further in view of Yoon et al (U.S. 6,320,148).

40. Regarding claims 9 and 27, Stencel/Bright fails to an electric field in the housing. However, Yoon disclose an apparatus for charging and separating particles. The device utilizes an electric field from a power source 4 to charge conducting particles in the

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powder while non-conducting particles are charged via tribo electrification (Figure 2, col. 4, line 39-45), hence efficiently charging more particles. Therefore, it would be obvious for one having ordinary skill in the art to include an electric field as suggested by Yoon in the device of Stencel/Bright in order to charge more particle, hence improving charging efficiency.

41. Regarding claims 10 and 28, Yoon teaches to connect the power source 4 to the electrodes 2 and 3 for generating an electric field to charge particles (Figure 2, col. 4, line 55-57). Although Yoon does not explicitly teach to connect the power source between the rotor and the housing, one having ordinary skill in the art would immediately envision from the teaching of Yoon that an electric field generated between the rotor and the housing of Bright would accomplish charging particles within the space via conduction. Therefore, the combined teaching of Stencel/Bright/Yoon fairly suggests an electric field between the rotor and the housing.

Conclusion

42. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuyu Tai whose telephone number is 571-270-1855. The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Kolb-Michener can be reached on 571-272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/X. T./

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Examiner, Art Unit 1795
/Jennifer K. Michener/

Supervisory Patent Examiner, Art Unit 1795